**Topic C: Sky Science- Constellations**

**Teaching Point:** Build a understanding of constellations and their movement in the night sky, as necessary background to understanding the concepts defined by the outcome

**Outcome:** Describe the location and movement of individual stars or groups of stars (constellations) as they move through the night sky.

**Materials:**

* Anticipation Guide
* TruFlix book (constellations) pages 6-15 <http://trx.grolier.com>

Username and password: **swes** (On this website, when students select “Read Along”, the page is read to them.)

* Other handouts on stars and constellations (optional)

**Connection:**

The students have been working on the unit Sky Science. During this lesson they will explore some information about stars and constellations and their movement in the sky.

If students are not familiar with the critical thinking concept of **plausible conclusion**, teach a mini-lesson on plausible conclusion PRIOR to teaching this science lesson.

**Teach (modelling):**

1. **Plausible Conclusion mini-lesson**

Ask students what PLAUSIBLE means---i.e. very likely, possible, logical

We can use criteria to help us determine if a conclusion is plausible. (Write these criteria on the board.)

Criteria for a plausible conclusion- a conclusion is plausible if it

1. is consistent with the clues;

2. is consistent with our prior knowledge or experience

Provide an example of a scenario with a conclusion that is not plausible (i.e. doesn’t meet those 2 criteria) and another conclusion is plausible (i.e. it does meet the 2 criteria).

For example: One morning, 2 students rode their bicycles to school. They noticed a puddle in the middle of the road. After they had ridden past the puddle, one student said, “It must have rained last night.” The other student said, “We’re going to get all muddy now.” Which student’s conclusion is more plausible? (Give students some time to discuss this with their partner. Ask a volunteer or two to explain their thinking.)

Then teacher explains- we need to use the criteria to see which conclusion is more plausible.

“It must have rained last night” may be the more plausible conclusion.

This statement meets the 1st criteria- it is consistent with the clues that we have from the story. Even though when there are puddles, you can get muddy if you play in them, the clues from the writing tell us that the students already rode past the puddle, it most likely won’t get them muddy.

This statement also meets the 2nd criteria in that it is consistent with prior experience- we know when it rains at night, sometimes puddles do form and you can see them in the morning.

It could also be argued, however, that the students could go back and play in the puddle and get muddy, even though that is not consistent with the clues that are in the writing. It may, however, be consistent with previous experience if a student had, on another occasion, played in a puddle and got muddy on the way to school. Then that conclusion could be supported in meeting that criteria.

(You can also do the [*Investigating Pictures*](http://www.learnalberta.ca/content/ssmt/html/investigatingpictures_mt.html) lesson with students to teach about plausible conclusions. i.e. what clues in the picture lead you to the conclusions about the *where*, *what* and *who* are in the picture? *Investigating Pictures* student handout is included in this lesson package.)

1. **Sky Science lesson**

“You have been learning about objects in the sky and that the sun and stars emit the light. How many of you have taken time to look at the stars in the sky? What did you notice? Has anyone ever heard of the word constellation before? Today we are going to think about what we know about stars and constellations and discover if what we already know is true or false and why.”

“I am going to read some statements, and based on what you already know about the sky, you will decide whether you think each statement is true or false.”

Refer to the *Anticipation Guide* handout. Read through the first statement out loud, asking students to check True or False, depending upon what they think the answer is to the first statement. Ask a student to share, with the class, what they checked and WHY they checked that statement- what do they already know that helped them decide if it was true or false? “We will find out later if this is indeed true or false.”

Read through the remaining statements, having students check True or False, and have them show you a thumb up if they said true, and a thumb down if they said false. Then students tell their partner WHY they checked true or false.

Do not reveal any correct answers at this point. We want the students to remain curious about their thinking (i.e. “anticipate” the right answer.)

After all statements have been read and checked:

“As you read some information about the sky today, you will discover more information about stars and constellations so you will be able to add to your understanding. You might change your answer as you discover more information about the sky. I am going to show you what this looks like.

Model how to do #1- “First, you need to find the **information from the reading** that helps you decide if the statement is true of false (this is the evidence, or the clues that help lead you to your conclusion about whether the statement is true or false.)”

Read through the appropriate information for statement 1, modelling how to write the information from the reading into the space in the Anticipation Guide.

“Next, you will go to the criteria to see if your conclusion is plausible- does it meet the criteria? Put a check mark beside each criterion if your conclusion meets that criterion.” Model how to do this, and think out loud as you model.

Do #2 in a similar manner if students need additional scaffolding.

Students do #3-5 with partner.

**Extension:** Explain to students that if they finish early, they can find other information about the sky. With their partner, they can decide upon which new learning would be most important to share with the rest of the class.

**Closure:**

* Bring students back together and ask for volunteers to share their responses for the statements along with their supporting evidence. During this time clear up any confusion that students may have about any of the statements.
* Students who did the extension task could share additional important new learning they discovered.
* Ask students to individually reflect on whether or not this strategy helped them really think about and understand what they were reading. Ask for volunteers to share their thinking.

**Additional supports:**

* Begin by establishing a QUIET SIGNAL (e.g. clapping a pattern, etc. so it will be easy to draw students back together when time.)
* Students may work individually or with partners and read or listen to the information to determine if their initial responses were supported or if they need to be changed.
* Students might use headphones to hear the audio better.
* Encourage students to listen to or read the material **more than once** to deepen understanding.
* In the *Anticipation Guide*, consider including the page number indicating what page students can find support for each statement (particularly for students who may need this additional scaffolding.)